

Clean Copy

INTERLABIAL PAD

Cross-reference to Related Applications

This application is a Continuation of International Application No.

PCT/JP02/04891 filed May 21, 2002, which application published in Japanese on Nov.

28, 2002 as WO 02/094155 A1 under PCT Article 21(2).

Background of the Invention

Technical Field

The present invention relates to an interlabial pad which can be worn closely

fitted into between the labia.

Background Art

Conventionally, a sanitary napkin and a tampon are used generally as sanitary

products for the female. Here, there have been great efforts to prevent the leak of blood

Moreover, as for the tampon, there have been great efforts for relieving the foreign

feeling and the discomfort when wearing it and intervaginal fixing trouble due to the

Under such situation, a sanitary product of an interlabial pad has attracted people

as a sanitary product featured between the sanitary napkin and the tampon in recent years.

On the other hand, Japan Utility Model Hei 5-18523 (see Fig. 25, which

corresponds to Fig. 1 in this Specification) discloses a sanitary napkin, in which an area

central portion of the surface which is brought into contact with the body of a wearer as

configuration of the sanitary napkin, the projected area is inserted between the labia so

that the contact state is improved compared to an ordinal sanitary napkin.

However, in the napkin as described, it is difficult to bring the projected area of the sanitary napkin to a predetermined position. In other words, it is necessary for the wearer to lead skillfully the projected area of the improved sanitary napkin as described above to the predetermined position between the labia by an action of wearing an underwear since the sanitary napkin is fixed to the underwear whereby the napkin is fitted to a body by bringing up the fixed napkin together with the underwear. While wearing the underwear, leading the projected area of the sanitary napkin to the predetermined position is indirect from wearing so that it is more difficult to control it and less precise to put the napkin on the right spot. Also, the projected area is formed by increasing the thickness of the absorbent body, which may cause the wearer to have a strong foreign feeling depending on the thickness.

Although the projected area like that in the example of the related art is not provided, the above-described interlabial pad can obtain the same contact state as the related art may have because of the nature of the product, which is to insert the product between the labia.

However, the interlabial pad is to be put between the labia where is hard to be viewed so that it is not easy to wear it. In addition, if the interlabial pad is not put onto the right position, a great deal of blood leak may cause damages since it is smaller than a sanitary napkin.

Furthermore, the interlabial pad is directly fitted between the labia so that the contact state with the body is easily influenced by the shape of the labia of the wearer. Therefore, it is necessary that the pad be appropriately fitted to any individuals of difference.

The present invention has been designed to overcome the foregoing problems. An object of the present invention is to provide an interlabial pad which can be worn with close contact state by any wearer who has different shapes in her labia, in particular, deep or shallow labia and which has a configuration so as to achieve sure and sanitary wear.

Summary of the Invention

In accordance with the present invention, an interlabial pad is provided having a finger insertion opening. The interlabial pad has a main sheet body which contains a first absorber between a water permeable surface sheet, located on the side of the main sheet body facing the labia (the body side) and a water permeable backing sheet, located on the opposite side of the main sheet body facing the garment underneath the labial region (the garment side). The interlabial pad further comprises a generally planar sub-sheet body which contains a second absorber between a water permeable surface sheet, located on the body side, and a backing sheet, which may be either water permeable or non-permeable, located on the garment side. The first and second absorbers are enclosed in the main sheet body and sub-sheet body, respectively, by directly bonding the longitudinal side edges of respective surface sheets and backing sheets. Similarly, the main sheet body and the sub-sheet body are bonded along their longitudinal side edges. For the purposes of this disclosure, the longitudinal direction extends from the end of the interlabial pad located proximate the labia to the end of the interlabial pad located proximate the buttocks of a user and the lateral direction extends along the interlabial pad from the side proximate one leg to the side proximate the other leg.

The main sheet body is formed with an elongated convex area formed longitudinally along the main sheet body such that the main sheet body in the lateral direction is convex towards the body side and extends in the longitudinal direction substantially along the center of the main sheet body. The elongated convex area has two ends in the longitudinal direction. Between the two ends, the elongated convex area has a substantially triangular hollow portion in a lateral cross section. At least one of the two ends is open creating a finger insertion opening through which a finger is insertable into the hollow part. Thus, a user is able to more easily place, apply or adjust the interlabial pad by inserting a finger into the finger insertion opening, and into the hollow portion of the elongated convex area, and using their finger to manipulate the position of the interlabial pad.

The elongated convex area may include a bent portion formed by bending the main sheet body. The lateral cross sectional area of the elongated convex area is preferably at least 1 cm^2 and may decrease in cross sectional area from one end to the

mini sheet piece attached on the interlabial pad according to the embodiment;

Figs. 10(A)-(D) illustrate cross-sectional drawings of the attachment position of the mini-sheet on the interlabial pad according to the embodiment;

Fig. 11 is an explanatory illustration for describing the state when inserting the forefinger from the first finger insertion opening to the hollow space at the time of using the interlabial pad according to the embodiment;

Fig. 12 is an explanatory illustration for describing the state when inserting the forefinger to the second finger insertion opening at the time of using the interlabial pad according to the embodiment;

Figs. 13(A)-(B) illustrate that the first finger insertion opening and the second finger insertion opening face towards the same direction;

Fig. 14 is an illustration showing the state when wearing the interlabial pad between the labia according to the embodiment;

Fig. 15 is a front cross section showing the state of the mini sheet piece after wearing the interlabial pad according to the embodiment;

Fig. 16 is an explanatory illustration showing the state when removing the interlabial pad by pulling the mini sheet piece according to the embodiment;

Figs. 17(A)-(B) illustrate a cross section showing the wearing state of the interlabial pad having a ready-made projection;

Fig. 18 is a cross section showing the state when the interlabial pad according to the embodiment is used by a wearer with a short labia depth;

Fig. 19 is a cross section showing the state when the interlabial pad according to the embodiment is used by a wearer with a long labia depth;

Fig. 20 is an illustration showing the state of experiment on measurement of separation force of an adhesive;

Fig. 21 is an illustration showing the state of experiment on measurement of shearing strength of the adhesive;

Figs. 22(A)-(B) illustrate the state where the interlabial pad according to the embodiment is folded and wrapped individually;

Figs. 23(A)-(B) illustrate the state where the interlabial pad according to the embodiment is individually wrapped in a wrapping container to which a character is

applied near its opening section;

Figs. 24(A)-(B) illustrate the state where the interlabial pad according to the embodiment is used together with a sanitary napkin;

Fig. 25 is an illustration showing an example of the state of a sanitary napkin of the related art having a ready-made projection;

Fig. 26 is an illustration showing an example of the state of a incontinence support pad of the related art having a finger insertion opening; and

Fig. 27 is an illustration for describing an example of the state of finger insertion in the incontinence support pad of the related art having the finger insertion opening.

Fig. 28 is an illustration for describing a size of the interlabial pad along the lateral direction.

Detailed Description of the Invention

Now, the interlabial pad according to the present invention will be described in detail by referring to the drawings.

[Basic Structure]

First, the configuration of an interlabial pad 1 according to the embodiment will be described. The interlabial pad 1 according to the embodiment is formed comprising a main sheet body 2, a sub-sheet body 6, a mini sheet piece 14 attached on the sub-sheet body 6 on the opposite side to the body. Fig. 1 is a schematic perspective view showing the body side of the interlabial pad 1 according to the embodiment and Fig. 2 is a schematic perspective view showing the opposite side from the body side of the interlabial pad 1 according to the embodiment. Figs. 3(A)-(B) are illustrations showing other embodiments of the mini sheet piece 14 attached on the opposite side from the body side of the interlabial pad 1. Fig. 4 is a cross section of the interlabial pad 1 according to the embodiment taken along the line I - I in Fig. 1.

As shown in Fig. 1, on the body side, the side that will be closer to the labia when in use, of the main sheet body 2, a long convex area 3 is formed by folding the main sheet body 2 in the longitudinal direction on the main sheet body 2 roughly in the center in the lateral direction. Then, a substantially flat area 4 is continuously provided in the area spread on both sides of the long convex area 3 in the lateral direction. The main sheet body 2, as shown in Fig. 4, is formed as one body by bonding a surface side sheet 11 and

a back side sheet 12 in a peripheral edge 15 so that an absorbent body 13 included in the above-described long convex area 3 is sealed inside.

Here, "peripheral edge" in the specification broadly refers to areas where the main sheet body and the sub-sheet body are directly bonded.

Subsequently, the above-described sub-sheet body 6, as shown in Fig. 4, is formed as one body by bonding a surface side sheet 61 and a back side sheet 62 at a peripheral edge 65 so that an absorbent body 63 is sealed inside. It is preferable for the absorbent body 63 not to be sandwiched in the peripheral edge 65 where the sheets are bonded. For example, by directly bonding the surface side sheet 61 and the back side sheet 62 only at the peripheral edge 65 and sealing the absorbent body 63 in the closed area, hardening of the peripheral edge 65 caused by sandwiching the absorbent body 63 in the peripheral edge 65 can be avoided. Thereby the interlabial pad becomes more comfortable to wear. The dimension of the absorbent body 63 may be about that of the interlabial pad 1 or, in order for the absorbent body 63 not to be sandwiched in the above-described peripheral edge 65, it may be provided smaller beforehand so as to be able to provide a gap of 2 to 10 mm from the contour of the interlabial pad 1.

The bonding of the surface side sheet 11 and the back side sheet 12 in the main sheet body 2 and that of the surface side sheet 61 and the back side sheet 62 in the sub-sheet body 6 may be done using a heat embossing adhesive and/or hot melting adhesive. Also, the absorbent body 13 is pasted to each of the surface side sheet 11 and the back side sheet 12 to prevent the interlayer separation therefrom, while the absorbent body 63 is pasted to each of the surface side sheet 61 and the back side sheet 62 to prevent the interlayer separation therefrom.

The above-described interlabial pad may alternatively be formed such that the main sheet body comprises a plurality of main sheet bodies, each of which are bonded together at each longitudinal side edge and at least either sleeve portion in the lateral direction is non-bonded so as to form a finger insertion opening, in which a finger can be inserted.

In this alternative embodiment, there is a plurality of main sheet bodies so that a finger insertion opening is formed between each of the main sheet bodies. Therefore, a wider selection of finger insertion openings are provided when a wearer inserts a finger

sticking to the finger.

[Long Convex Area]

Next, the shape of the long convex area 3 according to the embodiment will be described. Fig. 5 illustrates the long convex area 3 of the interlabial pad 1 according to the embodiment. Fig. 6 illustrates that the lateral cross sectional areas of the hollow part at both ends of the long convex area 3 of the interlabial pad 1 according to the embodiment are different. In this Specification, "lateral cross section" means a cross section vertical to the surface forming the interlabial pad and a cross section along the direction substantially vertical to the finger insertion direction.

As shown in Fig. 5, the long convex area 3 forming a first finger insertion opening 19A is formed in such a manner that the length of the top 3a is shorter than that of the bottom 3b in the longitudinal direction. Hence, in the finger insertion opening 19A of the long convex area 3, the edges on both sides are formed to be sloping from the bottom towards the top. Therefore, a wearer can insert the finger inside the finger insertion opening 19A without an interruption by the edges on both sides and pass through under the top 3a into the hollow part 5. Having the short top 3a results in a decrease in the contact area of the finger cushion of the inserted finger. In other words, the friction between the finger and the inner wall of the long convex area 3 is decreased when pulling out the finger from the hollow part 5 after wearing the interlabial pad 1 between the labia. As a result, it can drastically decrease the position shift of the interlabial pad 1 after wearing.

Also, the finger insertion opening 19A is substantially triangular and the lateral cross sectional area of the hollow part 5 continued therefrom in the lateral direction is 1 cm² or more. With this structure, the finger insertion opening 19A can be maintained to be wide-open to some extent.

In an implementation of the present invention, "to become substantially continuously smaller" means to become gradually smaller on the average and, as long as it becomes gradually smaller as a whole, a part of the area may become larger or stay equal.

The lateral cross sectional area of the long convex area 3 in the lateral direction, as shown in Fig. 6, is formed in such a manner that one of the end 5b from the other end

5a becomes substantially continuously smaller in the longitudinal direction. With this structure, the shape of the finger in which the lateral cross sectional area becomes smaller towards the fingertip fit to the shape of the hollow part 5. Therefore, the fingertip can be easily kept in contact with the opposite side surface to the body 12a (see Fig. 4) of the back side sheet 12 of the main sheet body 2.

Next, the attachment of the mini sheet piece 14 will be described. In the embodiment, as shown in Fig. 2, the mini sheet piece 14 is bonded with the back side sheet 62 by the bonding area 17 in the outer edge of the back side sheet 62 and the area from the outer edge to the inside is not bonded. Hence, the mini sheet piece 14 is attached over the area from one side of the back side sheet 62 to the other side thereby forming a hollow part 7 to be a second finger insertion space over the area from one side to the other side.

In the interlabial pad 1 according to the embodiment, the mini sheet piece 14 is attached so that the finger insertion opening 19B has an aperture large enough for the fingerbreadth in the direction of the finger nail width. Thereby, the flat-shaped fingertip may be inserted and its flat face may contact the sheet surface without being tilted against the sheet surface. In this respect, compared to an incontinence support pad of the related art (JP Patent Hei 6-506368), the ease of finger insertion is remarkably improved. In other words, in the incontinence support pad of the related art, a finger opening 70 (code 76 in the above-described Application) is closed (see Fig. 26, which corresponds to Fig. 20 in the above-described Application) in the normal state. Therefore, first, a wearer inserts a finger in the direction at a right angle to the incontinence support pad (see Fig. 27, which corresponds to Fig. 22 in the above-described Application) and then turns the finger so that the finger cushion can be faced to the incontinence support pad side.

incontinence support pad of the related art in which the aperture of the fingerbreadth is secondarily formed in the direction of the surface of the back side sheet, the finger insertion opening 19B which is suitable for finger insertion is primarily formed so as to be able to insert the finger naturally. Therefore, the wearer of the interlabial pad 1 can specify the direction of the finger insertion. As a result, the finger cushion naturally detects the wearing point so that precise wearing of the pad between the labia can be more easily achieved.

Fig. 7 is a sectional cross section of a part of the interlabial pad 1 in the lateral direction taken out from the interlabial pad 1 for specifically describing the whole girth inside the second finger insertion opening 19B. In Fig. 7, the part unnecessary for describing the length of the whole girth inside the second finger insertion opening 19B is shown by an alternate long and short dash line. The whole girth inside the second finger insertion opening 19B is a distance denoted by "L" in Fig. 7.

The whole girth inside the above-described second finger insertion opening 19B is preferable to be 30 to 120 mm, and more preferable to be 40 to 80 mm. When the whole girth inside the above-described second finger insertion opening 19B is shorter than 30 mm, the second finger insertion opening itself becomes small causing a difficulty in putting the finger in and out. On the other hand, when it is longer than 120 mm, the interlabial pad 1 can not be fixed to the finger. Therefore, it becomes harder for the finger cushion to be surely in contact with the sheet surface, which causes a problem when wearing. Accordingly, the length "L" in the embodiment is about 40 mm.

Fig. 8 is an illustration showing the mini sheet piece 14 attached on the interlabial pad 1 according to the embodiment where the length of the mini sheet 14 is 10% or more of the length of the interlabial pad 1 in the longitudinal direction. Figs. 9(A)-(C) illustrate various positions of the nonbonded part of the mini sheet piece 14 attached to back side sheet 6 of the interlabial pad 1 according to the present invention.

In the embodiment, as shown in Fig. 2, the nonbonded part of the mini sheet piece 14 and the back side sheet 62 is only one of the sleeve portions 14a which forms the second finger insertion opening 19B. However, the other sleeve portion 14b can be also left non-bonded. In this case, the length of the mini sheet piece 14 is preferable to be 10% or more of the length of the interlabial pad in the longitudinal direction, more preferable

to be 10 to 80%, and even more preferable to be 30 to 60%. By having the length as described, there is no chance for the finger once being inserted to the second finger insertion opening 19B to slip out therefrom or for the finger to play inside the hollow part 7. Therefore, the finger cushion can be kept facing the sheet surface of the back side sheet 62. Also, as shown in Fig. 8, it is clear that the direction of finger insertion can be provided in "A" direction. In regard to this, "the 10% or more length of the mini sheet piece 14" serves to indicate the direction of the finger insertion in the interlabial pad 1 according to the present invention.

In the case where a second non-bonded part 14c is provided in addition to the non-bonded part 14a forming the second finger insertion opening 19B, the tip of the finger may be exposed therefrom and may be in contact with blood when wearing the interlabial pad 1. In this respect, as shown in Fig. 9(A), by providing the second nonbonded part 14c in the position where the fingertip of the wearer is entirely covered, the finger can be kept unexposed so as to be in sanitary condition in contrast to what is shown in Fig. 9(B).

Similarly, as shown in Fig. 9(C), when the back side sheet 62 is provided with a plurality of mini sheet pieces 14 attached thereto and having a plurality of the nonbonded parts 14a and 14c, the exposure of the fingertip can be prevented if the second nonbonded part 14c is provided close to an end edge of the back side sheet 62 in the longitudinal direction.

[Bonding Position of the Mini Sheet Piece]

In an implementation of the present invention, "side portion" of the main sheet body or the sub-sheet body in the longitudinal direction includes not only the area corresponding to the peripheral edge of the interlabial pad but also some area surrounding the peripheral edge where the main sheet body and the sub-sheet body can be bonded.

Next, the bonding condition of the main sheet body 2, the sub-sheet body 6, and the mini sheet piece 14 according to the embodiment will be described. As shown in Fig. 10(A), when the bonding area 17 between the mini sheet piece 14 and the back side sheet 62 is fixed together in the same position where the peripheral edge 15 as the bonding area between the surface side sheet 11 and the back side sheet 12 of the main sheet body 2, and the peripheral edge 65 as the bonding area between the surface side sheet 61 and the

back side sheet 62 of the sub-sheet body 6 are bonded together, the outer edge side portion of the interlabial pad 1 becomes hard, thereby influencing the comfort level. This can be avoided by positioning and fixing the mini sheet piece 14 with the bonding area 17 in the area other than the peripheral edge 65.

However, as shown in Fig. 10(B)-(C), when the bonding area 17 is positioned away from the peripheral edge 65, friction may be generated by movement of the wearer so that it is possible that the wearer may be irritated.

As shown in Fig. 10(D), it is preferable that the peripheral edge 15 and the bonding areas 17 are positioned inwardly from the peripheral edge 65.

When attaching the mini sheet piece 14, pressure sensitive hot melt, thermal sensitive hot melt and the like can be used as an adhesive and can be applied on the whole surface, or in line, spiral, dots and the like.

The mini sheet piece 14 may be cut beforehand so as to fit with the attaching part as described. Also, if the bonding area is positioned in a different position from other sheets, it may be cut together with other sheets.

[Shape of the Interlabial Pad]

The shape of the interlabial pad 1 according to the embodiment may be in any shapes such as elliptic-shape, ovoid-shape, gourd-shape, or drop-shape as long as it is suitable to be worn between the labia. However, with the same shape as in the embodiment, it can be provided to easily fit for both the labia and the finger.

Each sheet of the interlabial pad 1 according to the embodiment is made of a flexible sheet so that it may be freely and elastically deformed by the external pressure. Hence, the shape of the interlabial pad 1 may be deformed in appearance such as being bent or twisted, however, the above-described shape is restored by removing such deformation from each sheet and stretching it. The main sheet body and the sub-sheet body are separated in the middle area so that one of the sheet bodies is not deformed in a similar shape when the other is deformed. In other words, with this structure, deformation of one sheet body is not transmitted to the other sheet body. There may be a case where the lateral cross sectional shape of the hollow part 5 in the lateral direction is deformed to be elliptic or circular along with the peripheral edge shape in the finger thickness direction at the time of finger insertion, or deformed to be in contact with the neighboring

surface being bent towards the inside of the hollow part. 5 before used. However, the substantial triangular is achieved by stretching each surface.

[Material]

The material used for the surface side sheet 11 of the main sheet body 2 and the surface side sheet 61 of the sub-sheet body 6 are not specifically limited as long as it has the structure which permeates a liquid, such as a fabric, nonwoven fabric or perforated plastic sheet. In addition to a perforated film obtained by performing perforation, heat embossing, machine processing or the like on a thermoplastic film, a composite sheet of the perforated film and the nonwoven fabric, the materials shown below can be also used.

As the fabric and nonwoven fabric, examples of the natural fibers are cotton, silk, and hemp, examples of the regenerated fibers are regenerated cellulose fiber such as rayon fiber and acetate fiber, and examples of synthetic fibers are a single fiber and a composite fiber with a sheath-core structure or the like made of polyolefin fiber, polyacrylonitrile fiber, polyester fiber, polyamide fiber, polyvinyl alcohol fiber, polyurethane fiber, nylon and the like. Especially for the nonwoven fabrics, web forming can be performed either by dry method (carding, spun bonding, melt-blown, air-laid and the like) or wet method, or a plurality of the methods may be combined to be used. Examples of bonding methods are spun lacing using columnar water flow, thermal bonding, and needle punching.

Among the materials, considering the liquid mobility from the inner face of the labia, chemical stimulation by an activator, and adhesion with the inner wall of the labia, it is preferable to laminate rayon with 1.1 to 4.4 dtex fineness and 7 to 51 mm fiber length by 40 to 80% of a total specific weight per unit area on the body surface side, and to laminate a mixture of rayon with 1.1 to 4.4 dtex fineness and 7 to 51 mm fiber length by 14 to 42% of a total specific weight per unit area and PET with 1.1 to 4.4 dtex fineness and 7 to 51 mm fiber length by 6 to 18% of a total specific weight per unit area on the clothing surface side. After laminating them so that the total specific weight per unit area of the two layers becomes 20 to 60 g/m², the fibers are entangled by water-flow interlacing treatment and then dried to prepare spun lace nonwoven fabric with the thickness of 0.13 to 0.50 mm. The spun lace nonwoven prepared as described is preferable. At this time, by mixing PET on the clothing side, bulkiness can be easily

improvement of the absorbing and holding capacity. Furthermore, by providing a mesh spun lace nonwoven fabric of rayon with 1.1 to 4.4 dtex fineness and 25 to 51 mm fiber length by a specific weight per unit area of 15 to 40 g/m², the liquid transmitted from the body face side can be dispersed by the mesh spun lace to be induced to almost all over the region of the pulp layer. Therefore, more liquid can be effectively absorbed.

The material used for the back side sheet 12 of the main sheet body 2 and the back side sheet 62 of the sub-sheet body 6 are not specifically limited as long as it has a sheet-type structure such as a fabric, nonwoven fabric, or a plastic. However, examples of an impermeable material are an impermeable film mainly made of PE, PP or the like, a breathing resin film, and a material in which a breathing resin film is bonded to the back side of a nonwoven fabric such as a spun bond or spun lace on which water-repellent processing is performed. Considering the degree of softness by which the comfort level is not influenced, for example, a film obtained by a specific weight per unit area of 15 to 30 g/m² mainly using LDPE (low density polyethylene) is used.

By preparing the back side sheet 62 of the above-described sub-sheet body 6 using an impermeable material, blood held in the absorbent body 63 can be prevented from leaking out. Also, by preparing it using a wet permeable material, stuffiness can be decreased when wearing. Thereby, discomfort felt by the wearers can be decreased when wearing. It is more preferable to reduce the contact ratio to decrease the friction drag value by embossing the above-described film to provide convex-shaped projections in order to, when the pad is worn between the labia, decrease the risk of the interlabial pad from being fallen off from the labia due to the high friction caused by the contact between the impermeable sheets, or with a pad used together, an underwear or the like.

It is preferable to select the material used for the mini sheet piece 14 considering the strength of the material so that it is not damaged when a finger is inserted. It is possible to select with no limitation a single material or the laminated material from the group comprising a nonwoven sheet, an elastic dilation nonwoven fabric, a film, a foam film, an elastic dilation film, a foam sheet, a tissue paper, and the like. A specific example is a film of 15 to 30 μ m thickness having an LDPE resin as the main component. Also, the mini sheet piece 14 can be prepared to have the tone of color, design, chroma which are different from those of the back side sheet 62 of the interlabial pad 1 by

coloring or printing a design or the like in order for the wearer to be able to easily discriminate the mini sheet piece 14.

In order to effectively use the interlabial pad 1 according to the present invention, it is also effective to prepare the above-described mini sheet piece 14 to have a characteristic of stretching or elastic dilation in the lateral direction of the back side sheet 12 regardless of the finger size of the wearer.

In order for the mini sheet piece 14 to have a stretching characteristic, a stretching spun bond nonwoven fabric can be used in which the stress is 0.1 to 0.5 N/25 mm at the time of 5% stretching when being stretched at a constant speed by a stretching speed of 100 m/minute with a grip interval of 100 mm.

Also, in order for the mini sheet piece 14 to have an elastic dilation characteristic, a fiber sheet or film sheet using thermoplastic elastomer resin may be used. Also, the elastic dilation material such as the thermoplastic elastomer resin or natural rubber may be used alone or may be combined with a non-elastic dilation material to be used.

The interlabial pad 1 of the present invention can be formed of a biodegradable material, a water dispersible material, a water soluble material, or any combination of these materials. Thereby, the interlabial pad 1 after being used is to be naturally decomposed as time goes by or actively. Therefore, it can be flushed down to a toilet so that discard of the used interlabial pad 1 can be performed easily and cleanly. In other words, the wearer, when discarding the interlabial pad 1, simply goes to a toilet and open the leg towards the toilet bowl to drop the interlabial pad 1 into the toilet bowl. Hence, there is no need for the wearer to be bothered going through a complicated action such as discarding the used product using hands. In addition, there is an advantage that trashes left in the toilet can be decreased.

Furthermore, by preparing the wrapping container for individually wrapping the interlabial pad 1 according to the present invention by a biodegradable material and/or a water soluble material and/or water dispersible material, the wrapping container can be also flushed down to the toilet. Thereby, the wearer can be freed from the trouble of discarding the wrapping container and trashes in the toilet can be further decreased at the same time.

In this Specification, "biodegradable" means that a substance is decomposed into

needle punching, and chemical bonding. Example of method for forming a water dispersible fiber is a method of forming a water soluble paper in which a fiber is formed into a sheet by a hydrogen bonding of fibers, and a water soluble paper in which a fiber is formed into a sheet by entangling.

In order to keep an excellent water dispersibility, it is preferable to have the fabric length within the range of 2 to 51 mm, and more preferable to have it within the range of 2 to 10 mm. Furthermore, if the water dispersibility and strength enough for not-causing damage are considered, it is desirable to select the fineness of the fiber (thickness) within the range of 1.1 to 4.4 dtex.

Also, it is preferable to have a specific weight per unit area of 20 to 60 g/m². The break strength (the break strength when constant-stretching at grip interval of 100 mm and stretching speed at 100 mm/min) of the permeable material in both longitudinal and lateral direction are at least 800 mN/25 mm, and more preferable to be selected from the range of 1000 to 7000 mN/25 mm with the consideration of softness at the time of wearing.

A specific example of the permeable material is a wet forming spun lace nonwoven fabric prepared by mixing 5 to 10 mm of rayon fiber of 1.1 to 4.4 dtex and wood pulp at 90:10 to 70:30 weight ratio with a specific weight per unit area of 25 to 40 g/m² and the thickness of 0.2 to 0.5 mm. A plurality of pores may be provided on the permeable material. In this case, the pores may be formed to have a diameter within the range of 0.5 to 1.5 mm with the porous area ratio (rate of the porous area per unit area) within the range of 3 to 20%.

A natural fiber and/or chemical fiber can be used for the absorbent body 13 and the absorbent body 63. Examples of the natural fiber are tissue, ground pulp, air laid pulp which is obtained by chemical bonding water soluble resin, cotton, and the like. Examples of hydrophilic chemical fiber are rayon which is a regenerated cellulose, feeble rayon, and the like, and examples of synthetic fiber are the one obtained by performing hydrophilic processing on polyester, polypropylene, polyethylene, ethylene vinyl acetate copolymer and the like. Also, examples of synthetic biodegradable fiber are poly lactic acid, polybutylene succinate, and the like, and examples of a water soluble material are carboxymethyl cellulose, polyvinyl alcohol, and polyacrylonitrile. Especially, it is

preferable to use the natural fiber such as pulp, cotton, or the like, or biodegradable fiber such as rayon, poly lactic acid, or the like. It is also possible to use one of these materials alone or by mixing the materials by a predetermined combination. It is also possible to form a high absorbent polymer such as sodium alginate, amylum, starch, carboxymethyl cellulose into grains or fibers and mixing it with the high absorbent polymer and the like at a predetermined combination.

An example of the absorbent body 13 as described is a material prepared by enclosing wood pulp by laminating it with a specific weight per unit area of 150 to 500 g/m² to tissue and prepare it to the thickness of 2 to 10 mm by a pressing device. By mixing 5 to 30 g/m² of an absorbent such as starch with the above-mentioned absorbent body, it is possible to also improve the absorbance and holding ability of blood.

Examples of the impermeable material with biodegradability and/or water solubility are cellulose derivative such as methyl cellulose, hydroxyethyl cellulose, carboxymethyl cellulose, etc., water soluble polymer such as polyvinyl alcohol, sodium alginate, sodium poly acrylate, polyacrylic ether, polyvinyl pyrrolidone, and a copolymer of isobutylene and maleic anhydride, poly lactic acid, polybutylene succinate, starch, dextrin, etc.

These materials may be used alone or mixed by a predetermined combination to be formed into a film sheet. Furthermore, repellent such as silicone may be applied or mixed thereto or it may be formed by a laminate processing performed on a nonwoven fabric.

A specific example of the sheet is a film obtained by preparing polyvinyl alcohol with a specific weight per unit area of 20 to 50 g/m² and to which 0.5 to 5 μ m silicone or fluorine is applied at least on either side and, more preferably, on both sides.

Examples of the preferable material for the mini sheet piece 14 are polyvinyl alcohol film, and a laminated material of polyvinyl alcohol, tissue, etc.

As the applicable bonding, bonding by polyvinyl alcohol with water solubility or water dilatation characteristic, heat sealing, hydrogen bonding, etc. may be used alone or combined to be used as a bonding method.

Specific examples of the wrapping container made of a water soluble material or water dispersible material are a compound material obtained by laminating tissue with a

specific weight per unit area of 15 to 40 g/m² and polyvinyl alcohol with a specific weight per unit area of 20 to 50 g/m² and applying silicone of 0.5 to 1 μm on the polyvinyl alcohol side, a spun bond nonwoven fabric, etc. prepared with a specific weight per unit area of 15 to 40 g/m² mainly using poly lactic acid fiber.

[Size]

The length of the main sheet body 2 in the lateral direction on the appearance is preferable to be 10 to 60 mm, and more preferable to be 20 to 40 mm. When the length in the lateral direction is longer than 60 mm, the area which is not inserted between the labia is rubbed against the femoral region or the like of the wearer and the friction generated thereby exceeds the holding strength between the both labia so that the interlabial pad may fall off. Also, when the length in the lateral direction is shorter than 10 mm, the area which can be inserted between the labia becomes small thereby reducing the contact area with the inner face of the labia. Thereby, there generates a risk of the interlabial pad being fallen off.

The above-described "appearance" means the distance between two points with the shortest length (V in Fig. 28). This is to carefully define the length since, in the manufacturing step, there may be a case where the length between the two points in a concave and convex shape is taken as the actual length (W in Fig. 28), that is, the distance between the two points in the state in which the concave and convex shape are unfolded to be flat.

On the other hand, the length of the main sheet body 2 in the longitudinal direction is preferable to be 50 to 150 mm, and more preferable to be 80 to 120 mm. When the length in the longitudinal direction is longer than 150 mm, friction generated by the substantial flat area 4 which is not inserted between the labia being rubbed against the underwear or a sanitary napkin exceeds the holding strength of the labia itself so that the interlabial pad 1 may fall off. Also, when the length in the longitudinal direction is shorter than 50 mm, the range of the area of main sheet body 2 which can be inserted between the labia becomes small thereby reducing the contact area between the labia and the main sheet body 2. Thereby, there generates a risk of the interlabial pad 1 being fallen off.

The length of the sub-sheet body 6 in the lateral direction on the appearance is

flat area 22 positioned in the periphery of the projection 21 is inserted in between the labia 18 so that the wearer may feel discomfort.

In this respect, in the interlabial pad 1 according to the present invention, when the height of the long convex area 3 is shorter than the depth of the labia 18, a finger is inserted from the first finger insertion opening 19A to fix the interlabial pad 1 to the fingertip and detect the ostium vagina by having the fingerprint surface of the finger being in contact with the opposite side surface to the body 12a of the back surface side sheet 12 so as to fit the interlabial pad 1. Thereby, the long convex area 3 is inserted between the labia 18. After wearing the interlabial pad 1, as shown in Fig. 18, only a part of the long convex area 3 which can be inserted in between the labia 18 is inserted between the labia 18. In other words, if the height of the long convex area 3 is within the same range as that of the depth of the labia 18, the long convex area 3 is inserted in between the labia 18 within the range. If the height is out of the range, the both side faces of the substantial triangular can be collapsed towards inside and deformed to fill the hollow part 5. As described, according to the present invention, there is no gap generated between the labia 18 and the interlabial pad 1. Therefore, blood leakage can be decreased and an increased level of comfort can be achieved.

In the lateral direction of the interlabial pad according to the present invention, extended areas 3 are provided around the bottom of the long convex area 3. Hence, the extended areas 3 are bent to cover the pudenda and positioned outside of it when the interlabial pad is worn. With this structure, the above-described extended areas 3 positioned to face the ostium vagina perpendicularly functions as a blocking wall even if a large quantity of menstrual blood leakage in the lateral direction occurs. In addition, boundary areas between the long convex area 4 and the extended areas 3 make bent portions sandwiching the pudenda when the interlabial pad is worn and work as as a moat to receive menstrual blood so as to prevent menstrual blood leakage to the outside even in the case that the long convex area 4 cannot absorb all menstrual blood. It is preferable that the extended areas 4 are substantially flat so as to perform effectively a function to cover the pudenda.

In a preferred embodiment of the present invention, the height of the substantial triangle is preferable to be about 5 to 30 mm, and more preferable to be about 10 to 20

mm. If the height is longer than 30 mm, a gap is easily generated between the substantially flat area of the surface side sheet of the main sheet body and the surface of the pudenda, which may cause leakage of menstrual blood through the gap. Also, if the height is shorter than 5 mm, the long convex area on the main sheet body can not be sufficiently fitted between the labia. Since the contact area with the labia is decreased, it may be more likely for the product to fall off the labia. In addition, the average value of the labia depth of pudenda among Japanese female is about 17 mm so that the more preferable range is from 10 to 20 mm.

The length of the bottom edge of the substantial triangle of the long convex area in the width direction is preferable to be about 1 to 20 mm and more preferable to be about 2 to 10 mm. If the length is longer than 20 mm, the top corner of the substantial triangle becomes too obtuse so that it may be hard to fit the long convex area between the labia of the female pudenda at the time of wearing the pad. Therefore, it is more likely that wearing becomes troublesome or that a fitted pad may shift from the right position. Also, if the length is shorter than 1 mm, the top corner of the substantial triangle becomes too acute so as to give a foreign feeling to the wearer when she uses the product.

When the height of the long convex area 3 is longer than the depth of the labia 18a of the wearer, the wearer will insert their finger from the second finger insertion opening 19B to fix the interlabial pad 1 to the fingertip. The main sheet body 2 and the sub-sheet body 6 can be separated in the outer edge to the inner side so that after wearing, as shown in Fig. 19, the main sheet body 2 near the long convex area 3 can be also inserted between the labia 18. As described, only the main sheet body 2 is inserted between the labia 18 and not the sub-sheet body 6. Therefore, compared to an interlabial pad with a single structure in which the whole thickness of the interlabial pad 1 is inserted in between the labia 18, any foreign feeling felt by the wearer can be remarkably decreased.

As described, according to the present invention, a gap generated between the pudenda of the wearer and the pad is decreased and there is no influence on the comfort level. When the long convex area 3 is inserted between the labia 18, the substantial flat area 4 is positioned to cover the pudenda from the outside so that the adhesion between the interlabial pad 1 and the inner thigh of the wearer can be improved.

[Application of Adhesive]

In order to decrease a risk of fall-off of the interlabial pad 1, adhesive is applied beforehand on a part of the surface side sheet 11 of the main sheet body 2 and/or the surface side sheet 61 of the sub-sheet body 6. Thus, the fixing and the adhesion of the interlabial pad 1 between the labia can be improved. Thereby, generation of a gap between the body and the interlabial pad due to the body action of the wearer can be prevented.

As the adhesive agent as described, a gel adhesive, etc. made of water-soluble polymer, a crosslinking agent, a flexibilizer and moisture can be used. Examples of the water soluble polymer used herein are gelatin, polyacrylic acid sodium, polyvinyl alcohol, and carboxymethyl cellulose, etc. Examples of the crosslinking agent are water soluble metallic salt such as calcium chloride and magnesium sulfate and examples of the flexibilizer are glycelol, wax, paraffin, etc.

As for other adhesive agents, a pressure sensitive hot melt can be also used. Incidentally, the pressure sensitive hot melt is mainly formed of synthetic rubber resin such as styrene-isoprene-styrene block copolymer (SIS), styrene-butadiene-styrene block copolymer (SBS), styrene-ethylene-butadiene-styrene block copolymer (SEBS), and styrene-ethylene-propylene-styrene block copolymer (SEPS). The pressure sensitive hot melt adhesive can be obtained by fused-mixing adhesion adder such as terpene resin or rosin resin and a flexibilizer such as wax, etc. to the pressure sensitive hot melt. Also, silicone adhesive agent can be used as other adhesive. An example of the silicone adhesive is a mixture obtained by mixing a crosslinking agent such as metallic salt of platinum, molybdenum, or antimony and a flexibilizer such as ester wax, glycerin, or machine oil, etc.

If the application stability is taken into consideration, the pressure sensitive hot melt is preferable. More specifically, it is an adhesive agent prepared by fused-mixing 15 to 25 weight % of SEBS, 15 to 35 weight % of flexibilizer, and 40 to 70 weight % of adhesive adder. Also, according to circumstances, it is possible to add antioxidant, antifuorescent or the like within the range of 0.1 to 1.0 weight % to the pressure sensitive hot melt.

It is preferable to cover the part where the adhesive is applied with a sheet which

is obtained by coating silicon resin on a tissue paper, which is a generally obtainable separate paper, or a sheet obtained by coating silicon resin on a film. Thereby, damages or separation of the adhesive part can be prevented while being stored.

Examples of the manner in which the adhesive is applied are in the form of whole surface application or in dots, mesh, or lines. The application position of the adhesive agent is not specifically limited as long as it enables fixing of the pad to the body. However, specifically considering the existence of the hair-grown part in the area in front of the labia, it is preferable to apply the adhesive near both end sides of the inter labia pad 1 in lines with about 1 to 5 mm width.

An example of valuation method of the adhesive strength will be described in detail. The valuation method is to measure the separation force (Fig. 20) and the shearing force of the adhesive (Fig. 21). A constant speed expansion tensile tester and a stainless plate of 80 mm×50 mm is required as the instruments used therein. As a preparation for the evaluation test, a test piece of a polyethylene film 36 in which an adhesive 37 is applied within the range of 25 mm in width and 50 mm in length is left for 30 minutes at a room temperature of 20 °C beforehand. Subsequently, the polyethylene film 36 is put lightly over a stainless plate 35 with the width being overlapped and the adhesive 37 being in contact with the stainless plate 35, and a 2 kg-roller is applied one way. Then, it is left for 30 minutes at a room temperature of 20 °C.

The test sheet obtained as described is used, and the test condition is provided to be 70 mm chuck interval (grip interval) and 100 mm/min testing speed. In the separation force test of the adhesive, it is separated in the pulling direction B in Fig. 20 and, in the shearing force test of the adhesive, it is pulled in the pulling direction C in Fig. 21.

In the case where the forces are measured by the measurement method described above, considering the burden imposed on the skin of the wearer, it is preferable that the measurement value of the separation force to be 100 to 2000 mN/25 mm and that of the shearing force to be 2900 to 15000 mN/25 mm.

[Individual Wrapping]

A wrapping body includes a wrapping container containing the interlabial pad where the interlabial pad is contained for individual wrapping in the wrapping container; and a tear-opening portion of the container is indicated by a picture or a character.

When individually wrapping the interlabial pad 1 according to the present invention, it is preferable to prepare the pad so that a finger can be inserted to the finger insertion opening 19A or finger insertion opening 19B right after opening the wrapping container. For example, the pad may be wrapped anisotropic to the wrapping container so that the opening direction and the fingertip insertion direction become the same, or the mini sheet piece 14 for finger insertion can be positioned to be near the opening section of the wrapping container.

It is also preferable to wrap the interlabial pad 1 by folding it in such manner that the finger insertion opening 19A and the finger insertion opening 19B are naturally opened when opening the wrapping container. Thereby, the wearer can easily recognize the position of finger insertion. As a result, the interlabial pad 1 can be fitted more quickly and easily.

When folding the interlabial pad 1, for example, as shown in Fig. 22A, after tearing the opening section 41, the wearer with shallower labia depth can easily insert the finger by folding it with the finger insertion opening 19A being the top face and, as shown in Fig. 22B, the wearer with the deeper labia depth can easily insert the finger by folding it with the finger insertion opening 19B being the top face.

Furthermore, by specifying the breaking direction of the opening section in accordance with the labia depth through providing a character or the like in the wrapping container 40, it can be also made easier for the wearer to insert the finger to the finger insertion opening suitable for her own labia depth. For example, the interlabial pad 1 is wrapped in the wrapping container 40 with the finger insertion opening 19A positioned near the opening section where a character meaning "shallow" is put, and the finger insertion opening 19B positioned near the opening section where a character meaning "deep" is put. Thereby, the wearer with the shallow labia depth can insert the finger easily from the finger insertion 19A by opening the wrapping container 40 from the opening section where a character meaning "shallow" is put as shown in Fig. 23A. Then, the wearer with the deep labia depth can insert the finger easily from the finger insertion 19B by opening the wrapping container from the opening section where a character meaning "deep" is put as shown in Fig. 23B.

[Other Applicable Embodiment of the Interlabial Pad]

The interlabial pad 1 according to the embodiment, as shown in Fig. 24, can be used together with an ordinal sanitary napkin 30. As for the wearing method, the interlabial pad 1 is fitted in between the labia and the sanitary napkin 30 is fitted to the underwear. By using it together with a sanitary napkin as described, the interlabial pad 1 of the present invention can be effectively used even on an occasion expecting a large quantity of blood.

Industrial Applicability

According to the present invention as described, a finger can be inserted to a finger insertion opening provided in an interlabial pad having a long convex area on the body side face. Thereby, the interlabial pad can be fixed and held by the fingertip so that the interlabial pad can be fitted in the appropriate position even in between labia where it is hard to be viewed.

Also, the above-described finger insertion opening is provided in two areas so that the wearer can select either one according to her own labia depth. In addition, the above-described long convex area are flexibly deformed in accordance with the labia depth of the wearer thereby enabling a close wearing of the interlabial pad in between the labia regardless of the labia depth of the wearer. As a result, leak of blood can be drastically decreased.